## Bibliographic Information

**Toward the metabolic engin[redacted]g of benzylisoquinoline alkaloid biosynthesis in opium poppy and related species.** Facchini, Peter J.; [redacted] Sang-Un; Bird, David A.; Samanani, Nailish. Department of Biological Sciences, University of Calgary, Calgary, AB, Can. Recent Res. Dev. Phytochem. (2000), 4 31-47. CODEN: RDPHF5 Journal written in English. AN 2001:766123 CAPLUS (Copyright 2001 ACS)


### Abstract

Benzylisoquinoline alkaloids are a large group of compds. with a restricted taxonomic distribution. Many of these alkaloids play an important role in the interaction between plants and other organisms. Moreover, many are pharmacol. active and include several widely-used drugs, such as morphine and codeine. Due to their structural complexity, wild or cultivated plants remain their only viable source. Although many enzymes involved in benzylisoquinoline alkaloid formation have been isolated, little is known about their regulation. A major focus of our research is to understand the overall control architecture of benzylisoquinoline alkaloid biosynthesis in opium poppy and related species. Recently, we have established several novel approaches to study the regulation of these pathways. We have developed effective methods for the genetic transformation and regeneration of opium poppy (Papaver somniferum), California poppy (Eschscholzia californica), and other alkaloid-producing plants. We have also developed a novel approach to investigate the subcellular targeting and localization of alkaloid biosynthetic enzymes, the intracellular trafficking of pathway intermediates, and the roles of these phenomena in metabolic regulation. Moreover, we are attempting to establish the tissue-specific location of various enzymes to define the relationship between development and alkaloid biosynthesis. As discussed in this review, the availability of genetic transformation protocols, together with our emerging knowledge of key regulatory mechanisms, are providing us with a platform for the rational design of metabolic engineering strategies that target benzylisoquinoline alkaloid pathways in a variety of important medicinal plants.